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THE BIRDS OF CARNAC ISLAND, WESTERN AUSTRALIA

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There are few published accounts of the bird fauna of Carnac Island. Serventy (1938), in a paper on the land birds of Garden, Carnac and Rottnest Islands, listed the known species but apart from incidental references there is no literature dealing with the sea birds. Most of the observations recorded below were made during a survey of Carnac in January, 1956, but they include in addition material compiled from the available literature and notes made by B. Phillips, D. L. Serventy, G. M. Storr and the author during other visits to the island.

Carnac Island forms an eroded remnant of a north-south line of aeolianite dunes which ran from east of Rottnest through the Stragglers, Mewstone, Carnac and Garden Islands, Point Peron and then to Penguin Island and the Murray Reefs (Fairbridge, 1950). The geology and physiography of Carnac are discussed briefly by McArthur (1957) in a paper concerned primarily with the plant ecology of the islands off Fremantle. Having an area of only 40 acres and a uniform topography, the surface of Carnac (with the exception of portions of the cliffs) is exposed to severe wind action, particularly from the west. This exposure, the close proximity to the sea on all sides and the type of soil restrict the vegetation to a scrub of predominantly "sand dune" type (see Smith, 1957). On the western and southern areas of the island the scrub is low and, apart from larger bushes of *Olearia axillaris* and isolated areas of wind-burnt *Acacia cyclopis*, the major part of the cover is close to the ground. The predominant plants are *Scaevola crassifolia*, *Tetragonia* spp., *Threlkeldia diffusa*, *Carpobrotus acqulaterus*, *Rhagodia baccata*, *Calocephalus brownii* and *Lepidosperma gladiatum*, with *Nitraria schoberi* on the northern talus slopes and a characteristic dense association of *Frankenia pauciflora* and *Rhagodia baccata* on the southern peninsula. However, adjoining the eastern beach and around the site of the old well there is a restricted area of dense *Acacia rostellifera*—*Olearia axillaris* thicket with trees, in places, up to ten and fifteen feet in height. This thicket is interspersed with

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Acacia cyclops and shows a gradual transition at its margin to the typical *Olearia* scrub.

The island lacks any natural fresh water. However, a shallow timbered soak behind the eastern beach contained water during the period of the survey but, as the soak was uncovered, it probably silts up in winter. The water level showed tidal variation but the water was fresh.

The small size, the restricted flora and the exposure of the island are reflected in the land bird fauna. Of a total of thirty-three species of birds recorded to date, eleven are seabirds, ten are waders, eleven are land birds and one is an aerial migrant, the Fork-tailed Swift. Of the eleven land birds, probably only four species breed on the island, the remaining seven being irregular visitors. By contrast, Rottnest supports at least sixteen resident land birds, excluding waterfowl, introduced game birds and two species which probably no longer occur on the island—the Bronzewing Pigeon (*Phaps* sp.) and a quail. (G. M. Storr, pers. comm.). Carnae, however, is noteworthy as the only area of overlap between the breeding ranges of the Little Penguin (northern limit of range) and the Wedge-tailed Shearwater (southern limit of range).

The species of birds recorded from Carnae are set out in the table below. The names in general are those given by Serventy and Whittell (1951) and the authorities are taken from the R.A.O.U. Checklist (1926).

TABLE 1—SPECIES OF BIRDS RECORDED FROM CARNAC ISLAND

Abbreviations: B = breeding bird. M = migrant. L = land bird. S = sea bird. V = vagrant. W = wading bird.

Recorders: 1. Alexander (1921). 2. Serventy, D. L. and C. F. H. Jenkins, 19.IX.1934. 3. Royal Society of Western Australia Excursion, 30.III.1935. 4. Serventy, D. L. and V. N. Serventy, 11.II.1951. 5. Watson, J. A. L., January, 1956. 6. Phillips, B., 10.III.1956. 7. Phillips, B., 4.XI.1956. 8. Watson, J. A. L., 22.II.1957. 9. Storr, G. M., 30.III.1958.

No.	SPECIES	STATUS	RECORDERS
	SPHENISCIFORMES		
1.	<i>Eudyptula minor</i> (Forster) Little Penguin	S.B.	3, 5
	PROCELLARIIFORMES		
2.	<i>Puffinus pacificus</i> (Gmelin) Wedge-tailed Shearwater	S.B.	1, 3, 4, 5, 9
	PELECANIFORMES		
3.	<i>Phalacrocorax varius</i> (Gmelin) Pied Cormorant	S.B.	2, 3, 4, 5, 7, 8, 9
	LARIFORMES		
4.	<i>Hydroprogne caspia</i> (Pallas) Casplan Tern	S.B.?	5, 8
5.	<i>Sterna bergii</i> Lichtenstein Crested Tern	S.B.?	2, 3, 4, 5, 8, 9
6.	<i>Sterna nereis</i> (Gould) Fairy Tern	S.B.	5, 5, 8
7.	<i>Sterna anaetheta</i> Scopoli Bridled Tern	S.B.	1, 4, 5, 8
8.	<i>Larus novae-hollandiae</i> Stephens Silver Gull	S.B.	2, 3, 4, 5, 7, 8, 9
9.	<i>Gabianus pacificus</i> (Latham) Pacific Gull	S.	3
	CHARADRIIFORMES		
10.	<i>Arenaria interpres</i> (Linne) Turnstone	W.M.	5, 8, 9

11.	<i>Haematopus ostralegus</i> Linne Pied Oystercatcher	W.B.?	2, 5
12.	<i>Haematopus fuliginosus</i> Gould Sooty Oystercatcher	W.B.?	5
13.	<i>Squatarola squatarola</i> Linne Grey Plover	W.M.	5, 8
14.	<i>Charadrius ruficapillus</i> Temminck and Laugler Red-capped Dotterel	W.B.?	5, 9
15.	<i>Cladorhynchus leucocephalus</i> (Vieillot) Banded Stilt	W.M.	5
16.	<i>Numenius phaeopus</i> (Linne) Whimbrel	W.M.	5
17.	<i>Tringa brevipes</i> (Vieillot) Grey-tailed Tattler	W.M.	9
18.	<i>Tringa hypoleucos</i> Linne Common Sandpiper	W.M.	4, 5, 9
19.	<i>Erolia ruficollis</i> (Pallas) Little Stint	W.M.	4, 5, 9
20.	<i>Demigretta sacra</i> (Gmelin) Reef Heron	W.B.?	5
ACCIPITRIFORMES			
21.	<i>Haliastur sphenurus</i> (Vieillot) Whistling Eagle	V.	5
22.	<i>Falco cenchroides</i> Vigors and Horsfield Kestrel	V.	2
23.	<i>Pandion haliaetus</i> (Linne) Osprey	V.	9
STRIGIFORMES			
24.	<i>Tyto</i> sp. Barn Owl	V.	3
PSITTACIFORMES			
25.	<i>Neophema petrophila</i> Gould Rock Parrot	V.?	9
CORACIFORMES			
26.	<i>Halcyon sanctus</i> Vigors and Horsfield Sacred Kingfisher	V.M.	3, 5, 9
27.	<i>Micropus pacificus</i> (Latham) Fork-tailed Swift	V.M.	5
PASSERIFORMES			
28.	<i>Hirundo neoxena</i> Gould Welcome Swallow	L.B.?	3, 4, 5, 8, 9
29.	<i>Hylochelidon nigricans</i> (Vieillot) Tree Martin	V.?	5
30.	<i>Rhipidura leucophrys</i> (Latham) Willy Wagtail	L.B.	2, 4, 5, 6, 8, 9
31.	<i>Eopsaltria griseogularis</i> Gould Western Yellow Robin	V.	5
32.	<i>Zosterops australasiae</i> (Vieillot) Silveryeye	L.B.	2, 3, 4, 5, 8, 9
33.	<i>Corvus coronoides</i> Vigors and Horsfield Raven	L.B.?	2, 5, 6, 8, 9

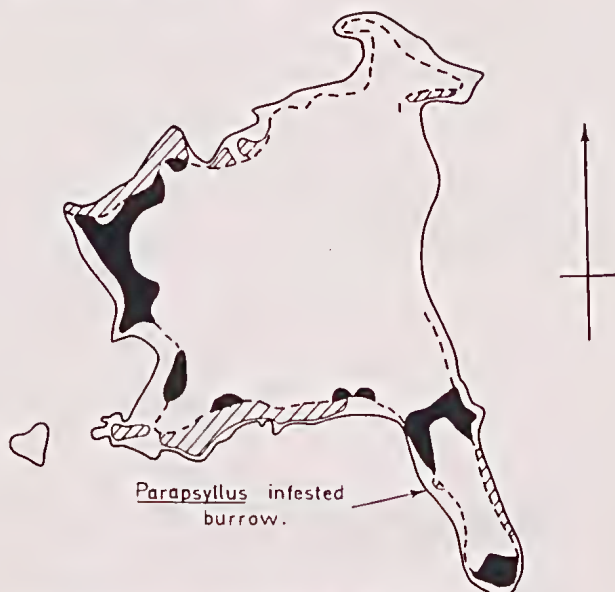
NOTES ON INDIVIDUAL SPECIES

1. *Eudyptula minor*, Little Penguin.

Both adults and young showed nocturnal activity above ground during early January, 1956. By the end of January, most of the old birds had left the island but the young were still swimming at night in the sheltered bays. There was evidently considerable mortality among both young and adult birds during the breeding season but one fully fledged chick showed no signs of parasite infestation when examined shortly after death.

2. *Puffinus pacificus*, Wedge-tailed Shearwater.

The approximate distribution of burrows of this species at the time of the survey is shown in the map, but some of the burrows, probably originally excavated by Shearwaters, were then occupied by Penguins. No census was taken. During the survey, all burrows investigated contained either an egg or a small chick. D. L. Serventy recorded "half-grown young" on 11.III.1951 and on 30.III.1958 G. M. Storr noted that the chicks were fat and downy, but were not leaving the burrows at night.



APPROXIMATE DISTRIBUTION OF
SHEARWATER BURROWS .
CARNAC ISLAND. JAN., 1956.

- Burrows above cliffs
- ▨ Burrows below cliffs



The guano mound at the mouth of one burrow (under the travertine on the southern peninsula) was found to contain both sexes of a flea of the genus *Parapsyllus* but none of these parasites was recovered from the birds themselves. A small hippoboscoid fly was also seen on one bird but attempts to collect these insects failed.

3. *Phalacrocorax varius*, Pied Cormorant.

No nesting activity was recorded in January, 1956, although one shattered egg was found in a dune on the northwestern corner of the island. On 30.III.1958, approximately fifty pairs were commencing to breed on Flat Rock, where the birds were trampling vegetation preparatory to nesting (G.M.S.).

6. *Sterna nereis*, Fairy Tern.

No breeding congregations of this species have been recorded from Carnae. However, one bird was observed with an egg on an exposed rock platform on 9.I.1956 but the egg was deserted shortly afterwards.

7. *Sterna anaetheta*, Bridled Tern.

Large numbers nest in crannies in the cliffs both of the main island and also the subsidiary islets. Many young birds were in the late down-early feather stage at the time of the survey, although one egg and two newly hatched birds were located. Breeding birds were also present on 2.II.1957 (J.A.L.W.) and 11.II.1951 (D.L.S.), but not on 30.III.1935 (D.L.S.) or 30.III.1958 (G.M.S.).

8. *Larus novae-hollandiae*, Silver Gull.

Gulls have been recorded nesting in the period September-January, with eggs and young on 19.IX.1934 (D.L.S.) and many fully fledged young in January, 1956. On 11.II.1951, no occupied nests were recorded (D.L.S.) and there was no breeding in progress on 30.III.1958 (G.M.S.).

10-19. Wading Birds.

A mixed flock of waders was present during the whole of January, 1956, feeding either on the exposed reef flats or on the bank of *Posidonia* on the eastern beach. *Arenaria interpres*, the Turnstone, and *Erolia ruficollis*, the Little Stint, were the most numerous species. A flock of *Cladorhynchus leucocephalus*, the Banded Stilt, was intermittently present during this time, the birds feeding in-shore in the eastern bay but, on disturbance, flying out and alighting on deeper water. The flock contained about twice as many young birds as adults.

20. *Demigretta sacra*, Reef Heron.

All individuals of this species recorded were of the dark grey phase. Between one and three birds were recorded almost daily during the 1956 survey.

27. *Micropus pacificus*, Fork-tailed Swift.

Two influxes of Swifts were recorded during the survey of 1956. On 1.I.1956, only a few birds were present but from 21 to 25.I.1956, larger parties were observed. On 21.I.1956, following strong easterly winds and high temperatures, a large flock built up on the western lee of the island, the birds flying in from the east and north and out towards the south. Associated with the Swifts were large numbers of the dragonflies *Anax papuensis* (Burm.) and *Hemicordulia tau* Setys, but the Swifts appeared to be feeding mainly on smaller insects above the dragonfly flock although some *Hemicordulia* were taken. This second irruption was probably continuous with that mentioned by Ford (1958).

28. *Hirundo neoxena*, Welcome Swallow.

One of the commonest of the land birds, which almost certainly breeds under the limestone cliffs although no nests have been recorded.

30. *Rhipidura leucophrys*, Willy Wagtail.

Two pairs of adults were present in January, 1956, together

with at least two young. No nests were located, but the adults were seen chasing the young near the campsite. This species is the only land bird resident at Carnae which is not also resident on Rottneest. It is common on Garden Island.

31. *Eopsaltria griscogularis*, Western Yellow Robin.

A solitary individual of this species was seen and heard throughout January, 1956. It was heard particularly when it was visiting the soak early each morning. The occurrence of this bird on Carnae is of some interest. Regarding its distribution, Serventy (1948) found that the robin was "common and resident in the Darling Range, and some individuals spread out into the coastal plain in the winter months, similarly to the Grey Fantail. In recent years, these nomadic movements have become much less numerous. My last record for King's Park, which used to be visited regularly, was the winter of 1935."

32. *Zosterops australasiae*, Silveryeye.

This species is the commonest land bird on the island and in January, 1956, the greatest numbers were concentrated in the *Acacia* thicket around the campsite. The birds made abundant use of the soak for drinking and bathing and were feeding on seeds of *Acacia* and grasses together with insects both from the ground and from the *Acacia*.

33. *Corvus coronoides*, Raven.

A large deserted nest, possibly that of a Raven, was collected from a dead *Acacia rostellifera* on 6.I.1956. There is no other evidence to confirm that the birds breed on Carnae, although they have been recorded regularly.

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REFERENCES

- ALEXANDER, W. B., 1921. The Birds of the Swan River District, Western Australia. *The Emu*, 20: 149-168.
- ANON., 1926. *Official Checklist of the Birds of Australia*. 2nd Ed., pp. X + 212, Royal Australasian Ornithologists' Union, Melbourne.
- FAIRBRIDGE, R. W., 1950. The Geology and Geomorphology of Point Peron, Western Australia. *J. Roy. Soc. W.A.*, 34: 35-72.
- FORD, J. R., 1958. Occurrence of the Fork-tailed Swift in the South-West, 1956. *W. Aust. Nat.*, 6 (4): 106-107.
- McARTHUR, W. M., 1957. Plant Ecology of the Coastal Islands near Fremantle, W.A. *J. Roy. Soc. W. Aust.*, 40 (2): 46-64.
- SERVENTY, D. L., 1938. Birds of the Islands off Fremantle, Western Australia. *The Emu*, 37: 265-268.
- , 1948. The Birds of the Swan River District, Western Australia. *The Emu*, 47 (4): 241-286.
- and H. M. Whittell, 1951. *A Handbook of the Birds of Western Australia*. 2nd Ed., pp. 1-384, Patersons Press, Perth.
- SMITH, G. G., 1957. A Guide to the Sand Dune Plants of South-Western Australia. *W. Aust. Nat.*, 6 (1): 1-18.